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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/629,673 | 07/30/2003 | Hee Bok Kang | 40296-0036 | 6550 |
| 26633 | 7590 | 02/07/2006 | EXAMINER | |
| HELLER EHRMAN WHITE & MCAULIFFE LLP 1717 RHODE ISLAND AVE, NW WASHINGTON, DC 20036-3001 | | | NGUYEN, VAN THU T | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2824 | |

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-----------------|---------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/629,673 | KANG, HEE BOK | |
| | Examiner | Art Unit | |
| | VanThu Nguyen | 2824 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☒ Claim(s) 3-9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

1. This Office Action is in response to Amendment filed on December 20, 2005.
2. Claims 1, 3-9 are pending.
3. Claims 2, 10-20 are cancelled.

Response to Arguments

4. Applicant's arguments filed December 20, 2005 have been fully considered but they are not persuasive.

Applicant argues that Gupta discloses assigning memory interleaving schemes to bank bits based on the classification of the bank bits using a memory interleaving scheme look up table, but not a "code for differently controlling a memory interleave operation depending on an access latency time and a restore latency time. Examiner disagrees with this argument.

The memory interleaving scheme look up table 24 disclose in Gupta is a representation of a relation between memory banks and the controlling of memory interleave operation, therefore, it can be considered as code.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heap (PGPub. 2004/0093457) in view of Gulpta et al. (U.S. Patent No. 6,405,286).

Regarding claim 1, Heap discloses an interleave control device using any type of memory device (see paragraph [0052]), comprising a single memory array (903) having a plurality of memory banks inherently formed in a single chip, the single chip memory array controls access time differently in each address (addresses corresponding to each memory banks in memory array 903 which are operated in an interleave manner, see Fig. 9); a bus 906 configured to transfer data; a memory interleave controller 901 control the interleave operation by mapping input physical addresses to logical addresses with the use of hardware. Heap also mentions the procedure can be implemented with a processor readable medium using software with programming code essentially to perform the necessary tasks, wherein the processor readable medium (can be called registers) may include any medium that can store information, and nonvolatile ferroelectric memory is one of the kind (see paragraph [0054]).

However, Heap does not disclose that the memory interleaving operation is controlled depending on an access latency time and a restore latency time which are set in a memory interleave region corresponding to lower address bits of row address bits.

Gulpta et al. disclose, in FIG. 2, an interleave control device comprising a memory interleave controller (22, see FIG. 2) configured to program a code using inherent registers (in Interleaving Scheme LookUp Table 24) for differently controlling a memory interleave operation depending on an access latency time (i.e. row access time) and a restore latency time (i.e. precharge time) which are set in a memory interleave region corresponding to lower address bits of row address bits in a memory (8 bits for DRAM Page Interleaving within 11 to 14 Row Bits in FIG. 5, also see column 9, lines 3-13).

Art Unit: 2824

Since Heap and Gulpta et al. are both from the same field of endeavor, the purpose disclosed by Gulpta et al. would have been recognized in the pertinent art of Heap.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to control the interleave operation depending on access latency time and restore latency time because that is one of well-known interleaving schemes called Page Interleaving.

Allowable Subject Matter

7. Claims 3-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 2824

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to VanThu Nguyen whose telephone number is (571) 272-1881.

The examiner can normally be reached on Monday-Friday, 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

February 5, 2006



VanThu Nguyen
Primary Examiner
Art Unit 2824